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### INTRODUCTION

### HOW TO OPERATE SURVIVAL

Survival is an exciting game which consists of eight mazes formed by rectangular veins and thin golden cell membranes. Each succeeding maze is more complex than the preceding maze.

The player controls a large blue cell and zaps medicine into the veins. Each vein zapped disappears from the maze.

The enemy consists of four different colored viruses. The player must avoid the viruses or zap them. The color of the first virus zapped determines the color of the reborn viruses. When all viruses are the same color they can no longer be zapped.

When the last cell membrane is zapped, Aid Stations briefly appear in the 4 corners of the screen. The player must pick up extra zaps by reaching the corner before the Aid Stations revert to veins. Each time a player reaches an Aid Station he is awarded a baby cell. When the player receives 5 baby cells he gets an extra large blue cell.

The player must zap all veins in a maze before he runs out of zaps or cell life. If he fails, he loses a cell. When the player zaps all veins in a maze he gets a bonus and advances to the next maze.

If the player successfully completes all eight mazes, the maze pattern repeats with more viruses present.

## RECEIVING AND INSTALLATION (VIDEO GAMES)

### RECEIVING INSPECTION

Your game was shipped in ready-to-play condition. However, after removal of the shipping carton, a brief visual examination is suggested.

Naturally, you'll want to make note of any physical damage to the game cabinet and its external components for freight claim purposes. Considering the quality of the shipping carton, any damage to the exterior would indicate possible interior damage as well.

The interior of the game should also undergo a brief examination for: loose mounting hardware (check to be sure that the major components are still securely mounted); disconnected or loose wires, cables or harnesses; electronic devices loose in their sockets; etc.

At this time the game serial number should be logged. Please remember that the game serial number will be required if you need service from your distributor.

### ELECTRICAL REQUIREMENTS

A good earth ground is essential for the proper operation of this game or for that matter any electronic device. Problems with instability and erratic operation of computer-type devices can usually be traced to an ineffective ground system. Therefore, plug the game into a properly wired 3 prong outlet. If a 3 prong to 2 prong AC adaptor must be used, an alternate method of grounding the third prong must be used.

### INITIAL ADJUSTMENTS

When the game is connected to AC power, one of the game sounds may be heard. This is normal.

The audio level (volume) can be easily adjusted. This is achieved by rotation of the volume control located on the coin door. The audio level should compete with other machines "on the floor" to maximize play time.

### OPERATOR OPTIONS

The option switches allow you to select how many credits per coin, how many chances to play per game & bonus scoring. If your machine DOES NOT have multiple pricing capability, refer to page 2-2. If it DOES have multiple pricing capability, skip 2-2 and refer to page 2-3.

**CREDIT BUTTON.** When you push this button you can increase credits without affecting the counter. It's the red button on the coin door.

### WARNING

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. As temporarily permitted by regulation it has not been tested for compliance pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

SURVIVAL OPTION SWITCHES  
(LOCATED ON GAME BOARD NEAR PLUGS)

CHANGE OF DIP SWITCH								
DESCRIPTION	5P. DIP SW. POSITION (DS1)							
CELLS	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
2	OFF	OFF						
3	ON	OFF						
4	OFF	ON						
5	ON	ON						
BONUS CELL SCORE			SW3	SW4				
25,000			OFF	OFF				
35,000			ON	OFF				
45,000			OFF	ON				
55,000			ON	ON				
FREE PLAY/RESET					SW5			
NORMAL					OFF			
FREE	PATTERN TEST VIA 1 PLAYER SWITCH				ON			
RESET					ON THEN OFF			
COINAGE						SW6	SW7	
1 COIN / 1 PLAY						OFF	OFF	
2 COINS / 1 PLAY						ON	OFF	
3 COINS / 1 PLAY						OFF	ON	
5 COINS / 1 PLAY						ON	ON	
VIDEO/CONTROL FLIP-FLOP								SW8
UPRIGHT								OFF
COCKTAIL TABLE								ON

NORMAL SETTING 3 CELLS PER PLAYER  
1ST BONUS CELL AT 25,000 POINTS

TURN OFF POWER TO GAME BEFORE CHANGING SWITCH POSITIONS  
NEW SWITCH POSITION BECOME EFFECTIVE ON POWER UP

SURVIVAL OPTION SWITCHES (MULT-PRICE)

LOW DENOMINATION - LEFT REJECTOR

SET GAME BOARD SWITCHES

COLUMN	1	2	3	4
COINS	1 - (SW 6 OFF)	2 - (SW 6 ON)	3 - (SW 6 OFF)	5 - (SW 6 ON)
PLAYS	1 - (SW 7 OFF)	1 - (SW 7 OFF)	1 - (SW 7 ON)	1 - (SW 7 ON)

HIGH DENOMINATION - RIGHT REJECTOR

SET MULTI-PRICE BOARD SWITCHES

COINS	PLAYS	1	2	3	4	1	2	3	4	1	2	3	4
1	2	ON	ON	OFF	ON					ON	OFF	ON	ON
1	3	ON	OFF	OFF	ON					OFF	OFF	ON	ON
1	4	ON	ON	ON	OFF	ON	ON	ON	ON	ON	ON	OFF	ON
1	5	ON	OFF	ON	OFF					OFF	ON	OFF	ON
1	6	ON	ON	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF	ON
1	7	ON	OFF	OFF	OFF					OFF	OFF	OFF	ON
1	8					ON	ON	OFF	ON	ON	ON	ON	OFF
1	9									OFF	ON	ON	OFF
1	10									OFF	ON	ON	OFF
2	3	OFF	OFF	ON	ON					NOTE: 1ST coin gives some credit			
2	5	OFF	ON	OFF	ON					For Example:			
2	7	OFF	OFF	OFF	ON					5 plays for 2 coins gives			
2	9	OFF	ON	ON	OFF					2 plays for 1st coin			
										3 plays for 2nd coin			

## CIRCUIT DESCRIPTION OF MULTI-PRICING BOARD

The purpose of the multi-pricing board is to establish a pricing scheme for the left rejector that is dependent on but different from that of the right rejector.

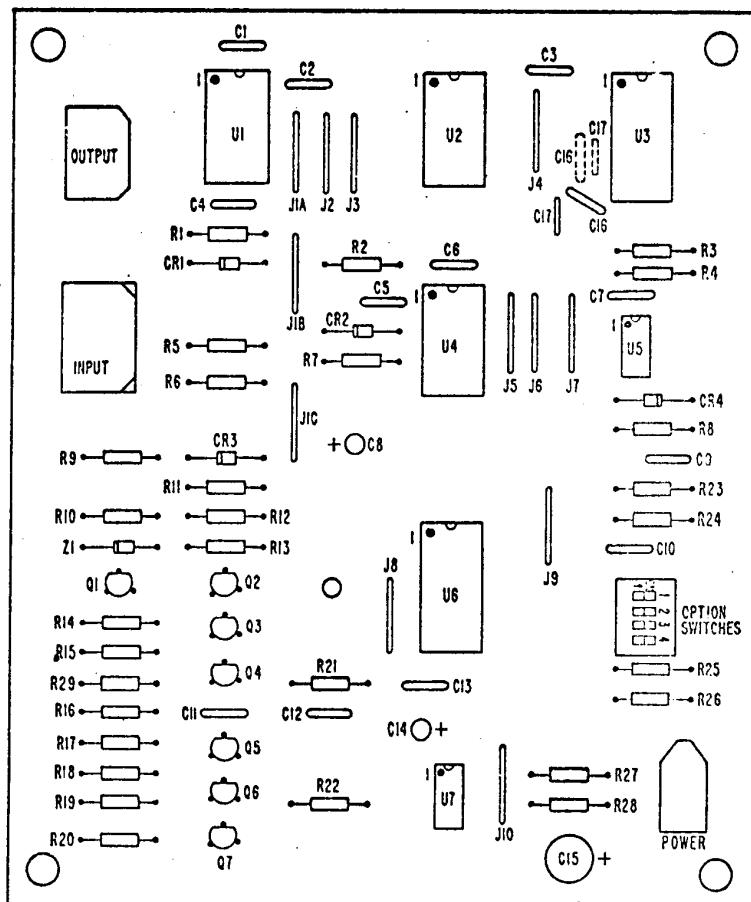
In the case of the right rejector, a coin deposited in the rejector will cause a pulse to be transmitted to the C.P.U. (via the distribution P.C. board) where it is processed as a single coin. Coins deposited in the left rejector are handled by the multi-pricing board to produce more than one pulse per coin — the exact number depending on the setting of the multi-pricing switch. When a coin is deposited in the left rejector, U1-5 will go low and be latched to U1 pin 6 as a high until the coin passes the contacts causing U1-6 to go low again. This positive pulse just created will be integrated and shaped as it arrives at U3-5 as a negative

pulse. U3 counts "up" on the positive-going edge and stores the number of coins deposited. As long as any coin remains unprocessed a high will be seen at U1-13 and if U1-12 is also high, a low will be seen at U1-11. This low gets inverted by U4 and applied as a high to the preset enable of counter U6. U6 had been held in the preset mode until this point but is now ready to count down from the value set in by the DIP switch.

The pulses to count down U6 come from oscillator U7 which is enabled shortly after U6-11 goes high. To make sure that U6 doesn't count down until the pre load has gone high, a time delay is introduced by R21, C12, and U2. U7 will oscillate sending pulses to U6 causing its output to count down. These pulses are also the same pulses sent to the CPU board as "coins."

When U6 counts down to zero, a borrow is sent to one-shot U5. U5 will produce a positive pulse at pin 3. U4 will invert this signal and apply it to U3-4 subtracting one coin from the accumulated count. The one-shot will also cause U1-12 to go low for the duration of the pulse. U1-12 going low pre-loads the counter to the DIP switch value again. If another coin is awaiting processing, we will go again; if not U3 outputs 2, 3, 6, 7 will be low keeping oscillator U7 from running and keeping U6-11 low.

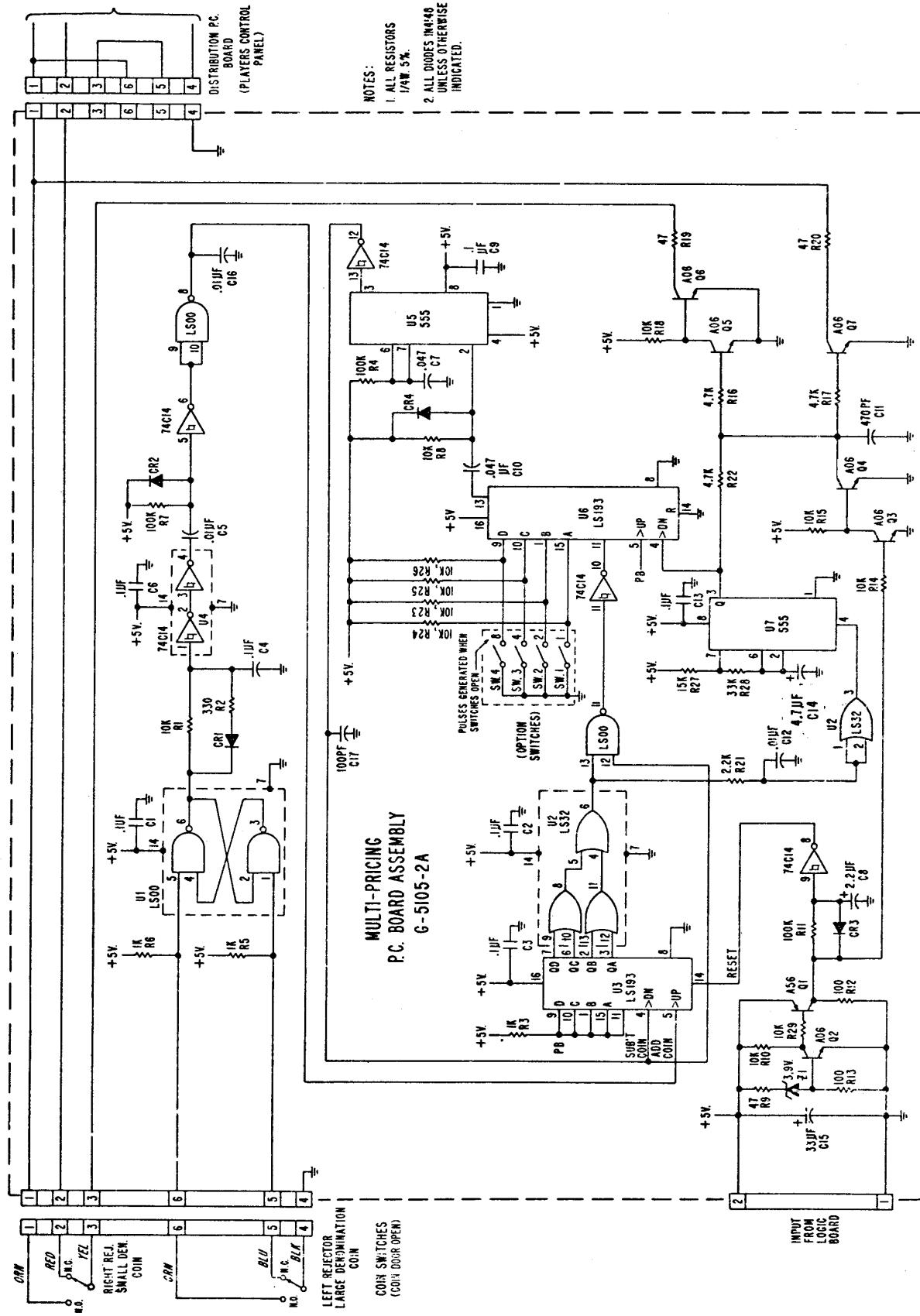
The power on reset signal appears on U3-14. Its purpose is to hold U3 reset until the 5 volts has come up and stabilized, preventing U3 from coming up in any configuration other than all lows on its output. This circuit also prevents erroneous pulses to be sent to the C.P.U. board by holding the collector of Q3 low until Q1 turns off.

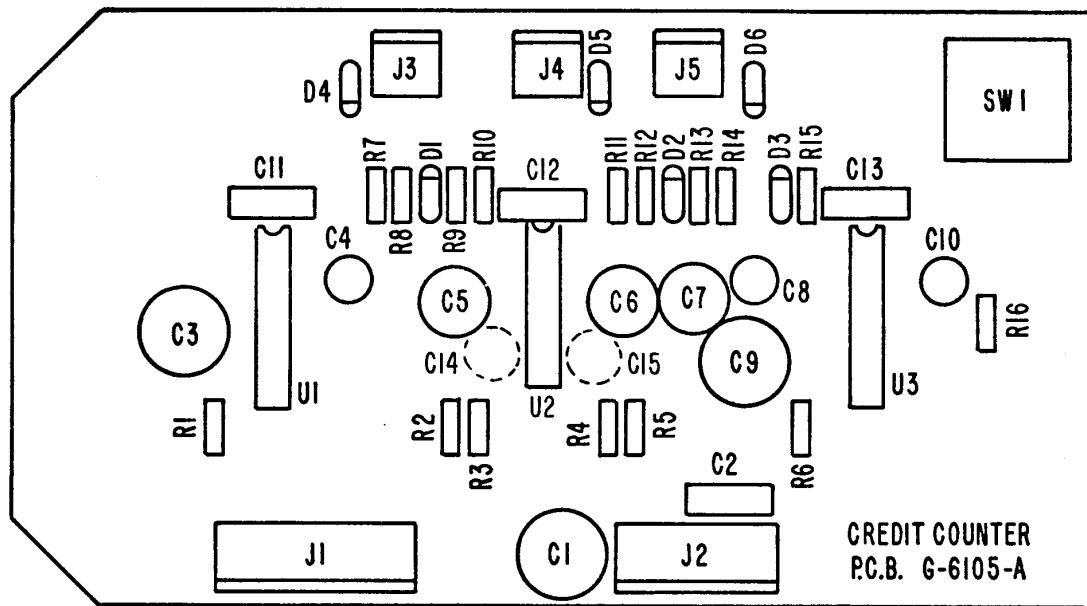


MULTI-PRICING P.C. BOARD ASSEMBLY G-5105-1A  
(C16 & C17 IN DASHED LINES ARE FOR G-5105-2A)

MULTI-PRICING  
P.C. BOARD ASSEMBLY  
G-5105-2A

Item	Part No.	Description	Item	Part No.	Description
RESISTORS			DIODES		
Note: All Resistors 1/4 Watt 5%					
R1	51293	10K	CRL	51498	IN4148
R2	52344	330	CR2	51498	IN4148
R3	51564	1K	CR3	51498	IN4148
R4	50966	100K	CR4	51498	IN4148
R5	51564	1K	Z1	G-5106	Zener 3.9V 400MW IN478A
R6	51564	1K			
R7	50966	100K			
R8	51293	10K	TRANSISTORS		
R9	52374	47	Q1	47831	MPS-A56 (PNP)
R10	51293	10K	Q2	49415	MPS-A06 (NPN)
R11	50966	100K	thru		
R12	51289	100	Q7		
R13	51289	100			
R14	51293	10K	INTEGRATED CIRCUITS		
R15	51293	10K	U1	G-0677	IC Quad NAND Gate 74LS00
R16	51292	4.7K	U2	G-0683	IC Quad OR Gate 74LS32
R17	51292	4.7K	U3	G-5107	4 Bit Binary Counter 74LS193
R18	51293	10K	U4	53338	IC Hex Schmitt Trigger 74C14
R19	52374	47	U5	51991	IC Timer LM555
R20	52374	47	U6	G-5107	4 Bit Binary Counter 74LS193
R21	52358	2.2K	U7	51991	IC Timer LM555
R22	51292	4.7K			
R23	51293	10K	MISCELLANEOUS		
R24	51293	10K	SW. Soc.	G-5108 52720	4 Station Dip Switch 14 Contact Solder Dip Socket
R25	51293	10K	Soc.	52724	16 Contact Solder Dip Socket
R26	51293	10K	Hsg.	G-5117 G-0614	2 Circ. Plug Housing .093 Pin
R27	52348	15K	Hsg.	G-0657 G-5110	6 Circ. Receptacle Hsg .093 Socket Solder Tail
R28	49268	33K	Hsg.	G-5109 G-0613 ST-10759 45816	6 Circ. Plug Hsg. .093 Pin Solder Tail Standoff - P.C.B. Rubber Cushion (1/4 X 3/8 X 3 3/4 Lg)
R29	51293	10K			
CAPACITORS					
C1	53299	.1 Mfd 50 WVDC 10%			P.C. Board for G-5105-A
C2	53299	.1 Mfd 50 WVDC 10%			P.C. Board for G-5105-1A
C3	53299	.1 Mfd 50 WVDC 10%			
C4	53299	.1 Mfd 50 WVDC 10%			
C5	53302	.01 Mfd 50 WVDC 10%			
C6	53299	.1 Mfd 50 WVDC 10%			
C7	53337	.047 Mfd 50 WVDC 20%			
C8	49146	2.2 Mfd 25 WVDC 20%			
C9	53299	.1 Mfd 50 WVDC 10%			
C10	53337	.047 Mfd 50 WVDC 20%			
C11	33762	470 MMfd 1000V 10%			
C12	53302	.01 Mfd 50 WVDC 10%			
C13	53299	.1 Mfd 50 WVDC 10%			
C14	53339	4.7 Mfd 15 WVDC 10%			
C15	52736	33 Mfd 25 WVDC 10%			
C16	53302	.01 Mfd 50 WVDC 10%			
C17	53327	100 MMfd 63 WVDC 5%			





CREDIT COUNTER P.C. BOARD ASSEMBLY

G-6105-A

ITEM NO.	PART NO.	DESCRIPTION	REF. DES.	MFGR. PART NO.
1	G-0812	Rectifier	D1, D2, D3, D4, D5, D6	IN4003
2	51289	Resistor 1/4W 5%	R2, R9, R12, R14	100 OHM
3	51564	Resistor 1/4W 5%	R3, R4, R5, R8, R10, R11, R13, R15	1K OHM
4	49269	Resistor 1/4W 5%	R1, R6	27K OHM
5	49268	Resistor 1/4W 5%	R7, R16	33K OHM
6	49146	Capacitor, Tantalum 25V	C4, C5, C6, C7, C10	2.2 MFD
7	53339	Capacitor, Tantalum 15V	C3, C9	4.7 MFD
8	52561	Capacitor, Tantalum 15V	C8	10 MFD
9	51988	Capacitor, Electrolytic 25V	C1	47 MFD
10	33762	Capacitor, Disc 1000V	C2	470 MMFD
11	53299	Capacitor, Monolithic 50V	C11, C12, C13	.1 MFD
12	52720	14 Contact Solder Dip Socket	U2	
13	52724	16 Contact Solder Dip Socket	U1, U3	
14	G-5136	2 Circuit Pin Header	J3, J4, J5	
15	G-5137	5 Circuit Pin Header	J2	
16	G-5459	6 Circuit Pin Header	J1	
17	G-6116	Quad 2-Input Nand Gate	U1	
18	G-6058	Dual Monostable Multivibrator	U1, U3	74LS03 74221
19	52725-2	Key Switch - Single Contact - Red	SW1	
20	G-6106	Credit Counter P.C. Board		
21	G-0940	Capacitor, Ceramic Disc 50V	C14	.001 MFD
22	G-0940	Capacitor, Ceramic Disc 50V	C15	.001 MFD

GENERAL INFORMATION  
AND PERIODIC MAINTENANCE

Your video game contains the same basic building blocks as any other video game.

THE POWER SUPPLY provides all the necessary voltages for the CPU, audio section, monitor and fluorescent light. Always unplug the game before replacing a fuse.

THE CENTRAL PROCESSING UNIT (CPU) is the "brain" of the game. It senses when a coin is dropped in the coin meter, and gives credit. It then reads what is happening at the operator controls, interprets and computes to make the game play according to what buttons the player pushes. It tells the monitor what to draw on the screen. And it tells the audio section when to make appropriate sound effects.

THE AUDIO SECTION generates all the sound effects for the game and powers the loudspeaker.

THE COLOR MONITOR is the picture tube. It draws pictures on the tube screen according to the instructions it receives from the CPU.

THE MAIN WIRING HARNESS carries power from the power supply to the CPU, audio section and monitor. It connects to each section through the Molex plugs. NEVER CONNECT OR DISCONNECT THE MOLEX POWER PLUGS UNLESS THE GAME IS UNPLUGGED.

PERIODIC MAINTENANCE - The only Periodic Maintenance required is an occasional cleaning. The very high voltage used on the picture tube attracts dust that gradually degrades picture quality. To clean: unplug game and let sit for at least 5 minutes to let voltages "bleed-off".

To clean the face of the picture tube and associated plastic parts, remove the control panel by loosening clamps on each side of panel on inside of cabinet. These clamps are accessible thru coin door. Remove the plexiglas window being careful not to scratch clear or painted areas. Window, gray filter and picture tube may now be cleaned with a mild solution of dish detergent. Dry all parts and reassemble.

## INTERFACE BOARD

MODEL K4675 BOARD P317

MODEL K4677 BOARD P318

WELLS-GARDNER PARTS...ORDER FROM THEM...SEE PAGE 4-1

Ref. No.	Part No.	Description		Ref. No.	Part No.	Description			
RESISTORS				CAPACITORS					
R201	340X3910-934	1/2W	5%	91	Ohm	C201	45X0524-038	16V	1000mf
R202	340X2223-934	1/4W	5%	22K	Ohm	C202	45X0524-053	16V	470mf
R203	340X3102-934	1/2W	5%	1K	Ohm	C203	349X2232-109	100V	.022mf
R204	340X2101-934	1/4W	5%	100	Ohm	C204	80X0099-020		680pf
R205	340X2104-934	1/4W	5%	100K	Ohm	SEMICONDUCTORS			
R206	340X3331-944	1/2W	10%	330	Ohm	TR201	86X0113-001	Transistor	NPN
R207	340X2222-934	1/4W	5%	2.2K	Ohm	TR202	86X0113-001	Transistor	NPN
R208	340X2222-934	1/4W	5%	2.2K	Ohm	TR203	86X0113-001	Transistor	NPN
R209	340X2104-934	1/4W	5%	100K	Ohm	TR204	86X0066-001	Transistor	PNP
R210	340X2101-934	1/4W	5%	100	Ohm	TR205	86X0066-001	Transistor	PNP
R217	340X2101-934	1/4W	5%	100	Ohm	TR206	86X0066-001	Transistor	PNP
R218	340X3102-934	1/4W	5%	1K	Ohm	TR207	86X0113-001	Transistor	NPN
R219	340X3102-934	1/2W	5%	1K	Ohm	TR208	86X0113-001	Transistor	NPN
R220	340X3681-934	1/2W	5%	680	Ohm	TR209	86X0113-001	Transistor	NPN
R223	340X2104-934	1/4W	5%	100K	Ohm	TR210	86X0113-001	Transistor	NPN
R224	340X3102-934	1/2W	5%	1K	Ohm	X201	66X0046-001	Diode,	Silicon
R225	340X2822-934	1/2W	5%	8.2K	Ohm	X202	66X0046-001	Diode,	Silicon
R226	340X2822-934	1/2W	5%	8.2K	Ohm	X203	66X0046-001	Diode,	Silicon
R227	340X2822-934	1/2W	5%	8.2K	Ohm	X204	66X0046-001	Diode,	Silicon
MODEL K4675 BOARD P317				ZD201	66X0040-019		Diode, Zener		
R211	340X2471-934	1/4W	5%	470	Ohm	MISCELLANEOUS			
R212	340X2471-934	1/4W	5%	470	Ohm	J201	204X9300-958	Socket,	6 Pin
R213	340X2471-934	1/4W	5%	470	Ohm	J202	204X9300-958	Socket,	6 Pin
R214	340X2151-934	1/4W	5%	150	Ohm	J203	206X5019-207	Socket,	4 Pin
R215	340X2151-934	1/4W	5%	150	Ohm	P201	204X9601-195	Plug,	6 Pin
R216	340X2151-934	1/4W	5%	150	Ohm	P202	204X9601-195	Plug,	6 Pin
R221	340X3271-934	1/2W	5%	270	Ohm	P203	204X9600-845	Plug,	4 Pin
R222	340X3271-934	1/2W	5%	270	Ohm	P204	6A393-003	Plug,	3 Pin
MODEL K4677 BOARD P318				P205	6A0393-006		Plug,	6 Pin	
R211	340X2201-934	1/4W	5%	200	Ohm				
R212	340X2201-934	1/4W	5%	200	Ohm				
R213	340X2201-934	1/4W	5%	200	Ohm				
R214	340X2201-934	1/4W	5%	200	Ohm				
R215	340X2201-934	1/4W	5%	200	Ohm				
R216	340X2201-934	1/4W	5%	200	Ohm				
R221	340X3471-934	1/2W	5%	470	Ohm				
R222	340X2201-934	1/4W	5%	200	Ohm				

POWER SUPPLY ASSEMBLY  
G-6060-A

ITEM NO.	PART NO.	DESCRIPTION
1	G-6063-A G-6071-A	Power Supply Chassis Weld Assembly Power Supply Chassis Weld Assembly Canada only
2	49250	Shock Safe Fuseholder
3	G-5403-A	Fuseholder Assembly - Canada only
4	44935	Snap-in Steel Clip - Canada only
5	ST-9843	Tapered Caplug #5 - Red
6	ST-3090	3 Amp 250V S1o-B1o Fuse
6A	44930	Fusetron GMQ 3•2A Fuse (F1) Canada only
7	ST-9631	5 Amp 250V S1o-B1o Fuse
8	ST-4332	1 Amp 250V S1o-B1o Fuse
9	ST-4323	0.8 Amp 250V S1o-B1o Fuse
10	ST-10703	0.5 Amp 250V S1o-B1o Fuse
11	ST-10589	3 Circuit Universal Socket Housing
12	ST-10588	4 Circuit Universal Socket Housing
13	ST-10570	9 Circuit Universal Socket Housing
14	ST-10500	15 Circuit Universal Socket Housing
15	G-6059-A	Power Transformer Assembly Canada only
	G-6059-CA	Power Transformer Assembly Canada only
16	ST-8722	10-32 Hex Flg Whiz-Lock Nut
17	ST-10062	8-36 X 5/16 M.S. Brass - Green Iridite
18	49007	Input Terminal Insulator
19	47827	3 Pole Input Terminal
20	ST-4518	6-32 X 1/2 Mach. Screw
21	ST-8715	6-32 Nut, Hex Flange - Serrated
22	ST-10762	Universal Strain Relief
23	G-5357	3 Conductor Cord & Plug - Domestic, Canada
	G-5377	3 Conductor Cord & Plug - Australia
	G-5378-A	3 Conductor Cord & Plug - England
	G-5376	Cordset - Germany, Belgium, France
24	G-6062-A	Switching Regulator MC014A
25	ST-8267	8-32 X 1/4 Tapping Screw

"SURVIVAL" PARTS LIST (G-205)

OVERALL ASSEMBLY

ITEM NO.	PART NO.	DESCRIPTION
1	G-6345-A	Cabinet Assembly
2	G-6310-A	Control Panel Assembly
3	G-6100-A	Monitor Assembly - Complete
4	G-6355-A	Game P.C.B. (Complete) 2 Boards (Survival)
5	G-6060-A	Power Supply - Complete - Domestic
6	G-6334	Service Manual & Parts Catalogue
7	G-6337	Schematic - Survival (3 Sheets)

CABINET ASSEMBLY - SURVIVAL

G-6345-A

1	G-24525-A	Cabinet - Wood
2	G-6115-A	Coin Door - Complete - Canada & Domestic
	G-6115-AA	Coin Door - Complete - Australia
	G-6115-BA	Coin Door - Complete - Belgium
	G-6115-FA	Coin Door - Complete - France
	G-6115-GA	Coin Door - Complete - Germany
	G-6115-JA	Coin Door - Complete - Japan
3	G-6108-A	Counter #1 - Complete (Single Price)
4	G-6109-A	Counter #1 & #2 - Complete (Multi-Price)
5	G-5419-A	Counter Assembly Only
6	G-6072-A	Coin Switch Cable
7	G-5092-A	Braided Shield - Short
8	G-5693	Bracket - Volume Control
9	G-5694	Potentiometer ( <u>Small</u> ) Standard
10	G-5664	Pointer Knob
11	G-5454	Bracket - Volume Control
12	G-5422	Potentiometer ( <u>Large</u> ) Alternate
13	33463	Pointer Knob
14	G-6105-A	Credit Counter P.C.B. Only (w/o Brkt)
15	ST-10539	Circuit Board Support (5/8")
16	ST-3340-D	10-24 X 1 1/4 Carriage Bolt - Blk Ox
17	ST-4813	.203 I.D. X 1/2 O.D. X .032 Fl. Washer - Z.P.
18	ST-8724-D	10-24 Hex Flg Whiz Lock Nut - Blk Ox
19	G-5282	Speaker Grille - Blk
20	G-5022	Speaker - 6 X 9
21	G-5199	Mounting Rail - 19"
22	ST-1443-D	1/4-20 X 1 1/4 Carriage Bolt - Blk Ox
23	ST-301	1/4 Int. Lock Washer
24	ST-1376	1/4-20 Wingnut
25	G-6060-A	Power Supply - 120V. Note Suffixes -CA Canada, -EA England, -AA Australia, -GA Germany, Belgium, France
26	G-5012-1	Tongue Brkt - C.B.
27	G-5048-A	Coin Box & Handle Assy
28	G-5014	Coin Box Cover
29	G-5439	Retainer - P.C.B. (Runner - R.H. Top)
30	ST-9741	8 X 1/2 Hex Flg (Type A) Z.P.
31	G-6100-A	Monitor - 19" Raster - Complete (w/Guard & Cable)
32	G-6101-A	Monitor - 19" Raster (Monitor only)
33	G-5428-A	Monitor Power Cable Assy
34	G-5638	Guard - CRT

## CABINET ASSEMBLY - SURVIVAL

G-6345-A

ITEM NO.	PART NO.	DESCRIPTION
35	G-24073	Monitor Platform Rail (Wood)
36	G-5441	End Mounting Bracket
37	ST-10904	10-32 X 1 Hex Flg Swageform - Z.P.
38	ST-3340-D	10-24 X 1 1/4 Carriage Bolt - Blk Ox
39	ST-3139	.203 I.D. X 5/8 O.D. X .031 Fl. Wshr - Z.P.
40	ST-8724-D	10-24 Hex Flg Whiz Lock Nut - Blk Ox
41	G-0831	Bezel - CRT (Blk)
42	G-5436	CRT Filter - Gray
43	G-5413-A	Light Assembly - 120V
	G-5414-A	Light Assembly - 220/240V
44	ST-3341-D	8-32 X 1 Carriage Bolt - Blk Ox
45	ST-8721	8-32 Hex Flg Whiz Lock Nut - Z.P.
46	49557	Ballast Plate
47	49554-2	Ballast Insulator
48	11556	14-15-20 Watt Starter (FS-2)
	49301	Insulated Starter 20 Watt 220/240V
49	G-5043	Fluorescent Lamp (F15T12) CW 15 Watt
50	G-6331	Top Window - Survival
51	G-5254	Retainer - Inner Top (Blk)
52	G-5253	Retainer - Top (Blk)
53	ST-10753-D	8 X 5/8 Pan Hd. Box Dr. (Type A) Blk Ox
54	G-5342	Clamp Fastener (Cabinet)
55	G-6310-A	Control Panel - Survival - Complete
56	G-6299	Control Panel - Screened - Survival
57	G-0623	Switch & Mtg. Assembly
58	G-0624	Button Assembly - Long
59	G-5341	Control Panel Clip
60	G-6046-A	Joystick Assembly - 8 Way
61	G-5433	Cover Plate - Joystick - Blue
62	G-5429-A	Control Panel Cable Assy
63	G-5469	Retainer - Front (Blk)
64	G-5252	Retainer - Center (Blk)
65	G-5249	Retainer - Rear
66	G-5247	CRT Window - Vertical (Blue)
67	G-5031-1	Price Card - 25¢
	G-5032-1	Price Card - Germany
	G-5033-1	Price Card - Belgium
	G-5034-1	Price Card - France
	G-5037-1	Price Card - England
68	G-6155-A	On/Off Interlock Sw. Cable Assembly (Includes Two Switches) -A (Canada and Domestic - 120V) White Plug -EA (England - 240V) Green Plug -GA (Germ - Belg - France - 220V) Blue Plug
69	V-22637	Switch - Cheat Interlock
70	49240	DPST Rocker Switch (On/Off)
71	G-6355-A	Game P.C.B. (Complete) 2 Boards
72	G-6360-A	PACEL - 001A P.C.B. Assembly (Survival)
73	G-6365-A	PACEL - 001B P.C.B. Assembly (Survival)
74	G-5409-A	Braided Shield Assembly
75	G-6333-A	Main Cable Assembly (Cab)
76	G-5257-A	Back Door Assembly - Complete
77	G-24085-A	Back Door Assembly - (Wood Only)
78	G-5126	Lock Bracket
79	ST-10760	Lock, Cam Bolts & Keys
80	G-6332	Decal - Survival

"SURVIVAL" PARTS LIST (G-205)

OVERALL ASSEMBLY

ITEM NO.	PART NO.	DESCRIPTION
1	G-6345-A	Cabinet Assembly
2	G-6310-A	Control Panel Assembly
3	G-6100-A	Monitor Assembly - Complete
4	G-6355-A	Game P.C.B. (Complete) 2 Boards (Survival)
5	G-6060-A	Power Supply - Complete - Domestic
6	G-6334	Service Manual & Parts Catalogue
7	G-6337	Schematic - Survival (3 Sheets)

CABINET ASSEMBLY - SURVIVAL

G-6345-A

1	G-24525-A	Cabinet - Wood
2	G-6115-A	Coin Door - Complete - Canada & Domestic
	G-6115-AA	Coin Door - Complete - Australia
	G-6115-BA	Coin Door - Complete - Belgium
	G-6115-FA	Coin Door - Complete - France
	G-6115-GA	Coin Door - Complete - Germany
	G-6115-JA	Coin Door - Complete - Japan
3	G-6108-A	Counter #1 - Complete (Single Price)
4	G-6109-A	Counter #1 & #2 - Complete (Multi-Price)
5	G-5419-A	Counter Assembly Only
6	G-6072-A	Coin Switch Cable
7	G-5092-A	Braided Shield - Short
8	G-5693	Bracket - Volume Control
9	G-5694	Potentiometer ( <u>Small</u> ) Standard
10	G-5664	Pointer Knob
11	G-5454	Bracket - Volume Control
12	G-5422	Potentiometer ( <u>Large</u> ) Alternate
13	33463	Pointer Knob
14	G-6105-A	Credit Counter P.C.B. Only (w/o Brkt)
15	ST-10539	Circuit Board Support (5/8")
16	ST-3340-D	10-24 X 1 1/4 Carriage Bolt - Blk Ox
17	ST-4813	.203 I.D. X 1/2 O.D. X .032 Fl. Washer - Z.P.
18	ST-8724-D	10-24 Hex Flg Whiz Lock Nut - Blk Ox
19	G-5282	Speaker Grille - Blk
20	G-5022	Speaker - 6 X 9
21	G-5199	Mounting Rail - 19"
22	ST-1443-D	1/4-20 X 1 1/4 Carriage Bolt - Blk Ox
23	ST-301	1/4 Int. Lock Washer
24	ST-1376	1/4-20 Wingnut
25	G-6060-A	Power Supply - 120V. Note Suffixes -CA Canada, -EA England, -AA Australia, -GA Germany, Belgium, France
26	G-5012-1	Tongue Brkt - C.B.
27	G-5048-A	Coin Box & Handle Assy
28	G-5014	Coin Box Cover
29	G-5439	Retainer - P.C.B. (Runner - R.H. Top)
30	ST-9741	8 X 1/2 Hex Flg (Type A) Z.P.
31	G-6100-A	Monitor - 19" Raster - Complete (w/Guard & Cable)
32	G-6101-A	Monitor - 19" Raster (Monitor only)
33	G-5428-A	Monitor Power Cable Assy
34	G-5638	Guard - CRT

## CABINET ASSEMBLY - SURVIVAL

G-6345-A

ITEM NO.	PART NO.	DESCRIPTION
35	G-24073	Monitor Platform Rail (Wood)
36	G-5441	End Mounting Bracket
37	ST-10904	10-32 X 1 Hex Flg Swageform - Z.P.
38	ST-3340-D	10-24 X 1 1/4 Carriage Bolt - Blk Ox
39	ST-3139	.203 I.D. X 5/8 O.D. X .031 Fl. Wshr - Z.P.
40	ST-8724-D	10-24 Hex Flg Whiz Lock Nut - Blk Ox
41	G-0831	Bezel - CRT (Blk)
42	G-5436	CRT Filter - Gray
43	G-5413-A	Light Assembly - 120V
	G-5414-A	Light Assembly - 220/240V
44	ST-3341-D	8-32 X 1 Carriage Bolt - Blk Ox
45	ST-8721	8-32 Hex Flg Whiz Lock Nut - Z.P.
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47	49554-2	Ballast Insulator
48	11556	14-15-20 Watt Starter (FS-2)
	49301	Insulated Starter 20 Watt 220/240V
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50	G-6331	Top Window - Survival
51	G-5254	Retainer - Inner Top (Blk)
52	G-5253	Retainer - Top (Blk)
53	ST-10753-D	8 X 5/8 Pan Hd. Box Dr. (Type A) Blk Ox
54	G-5342	Clamp Fastener (Cabinet)
55	G-6310-A	Control Panel - Survival - Complete
56	G-6299	Control Panel - Screened - Survival
57	G-0623	Switch & Mtg. Assembly
58	G-0624	Button Assembly - Long
59	G-5341	Control Panel Clip
60	G-6046-A	Joystick Assembly - 8 Way
61	G-5433	Cover Plate - Joystick - Blue
62	G-5429-A	Control Panel Cable Assy
63	G-5469	Retainer - Front (Blk)
64	G-5252	Retainer - Center (Blk)
65	G-5249	Retainer - Rear
66	G-5247	CRT Window - Vertical (Blue)
67	G-5031-1	Price Card - 25¢
	G-5032-1	Price Card - Germany
	G-5033-1	Price Card - Belgium
	G-5034-1	Price Card - France
	G-5037-1	Price Card - England
68	G-6155-A	On/Off Interlock Sw. Cable Assembly (Includes Two Switches) -A (Canada and Domestic - 120V) White Plug -EA (England - 240V) Green Plug -GA (Germ - Belg - France - 220V) Blue Plug
69	V-22637	Switch - Cheat Interlock
70	49240	DPST Rocker Switch (On/Off)
71	G-6355-A	Game P.C.B. (Complete) 2 Boards
72	G-6360-A	PACEL - 001A P.C.B. Assembly (Survival)
73	G-6365-A	PACEL - 001B P.C.B. Assembly (Survival)
74	G-5409-A	Braided Shield Assembly
75	G-6333-A	Main Cable Assembly (Cab)
76	G-5257-A	Back Door Assembly - Complete
77	G-24085-A	Back Door Assembly - (Wood Only)
78	G-5126	Lock Bracket
79	ST-10760	Lock, Cam Bolts & Keys
80	G-6332	Decal - Survival

## SURVIVAL GAME P.C. BOARD ASSEMBLY

G-6355-M

ITEM NO.	PART NO.	DESCRIPTION	REQ'D
1	G-6360-A	Pacel-001A P.C.B. Assembly (Survival)	1
2	G-6365-A	Pacel-001B P.C.B. Assembly (Survival)	1
3	G-6145-A	50 Conductor Ribbon Cable Assembly	2

## PACEL-001A P.C.B. ASSEMBLY

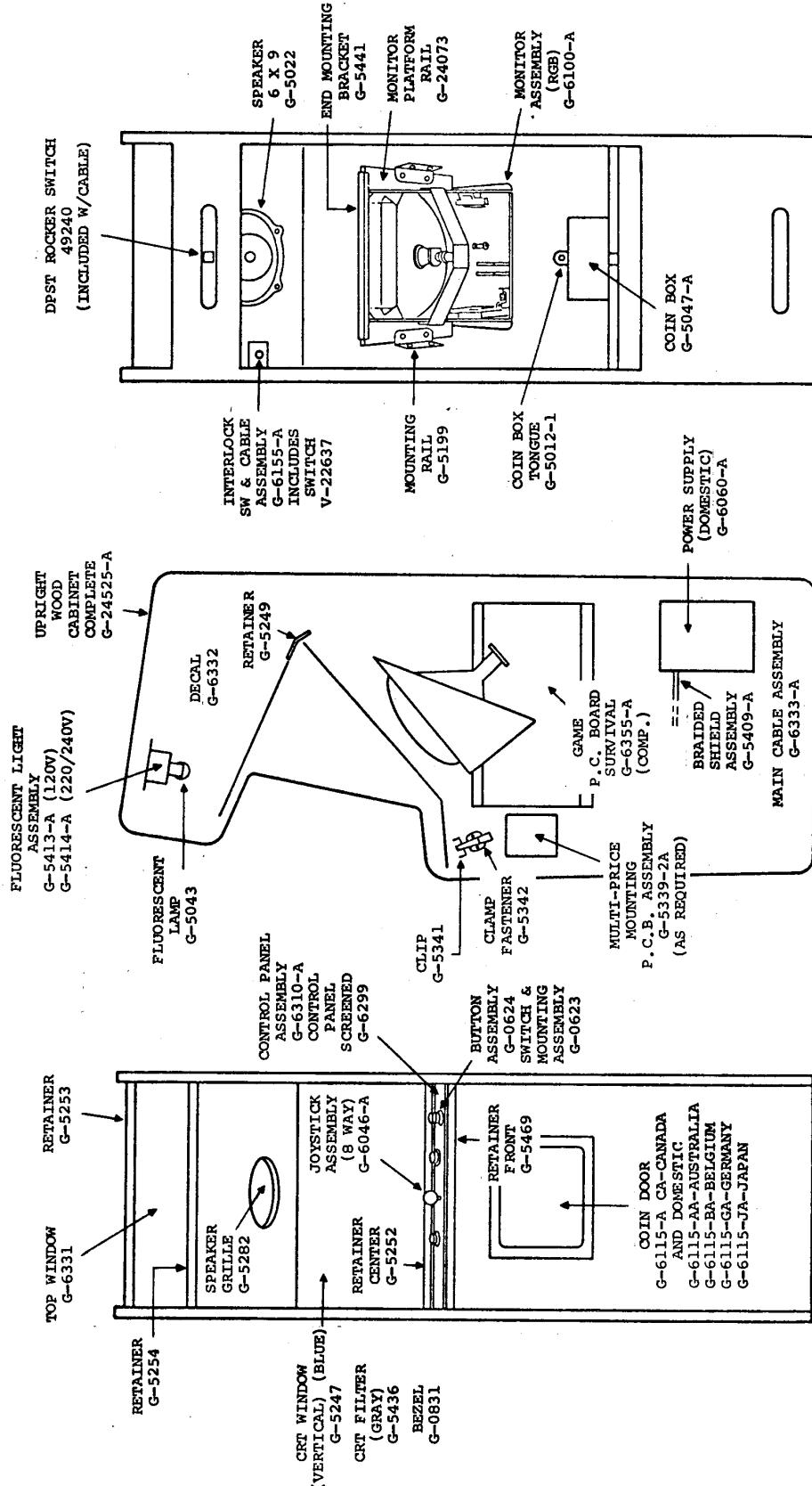
G-6360-A

ITEM NO.	PART NO.	DESCRIPTION	REF. DES.	MFGR. PART NO.
1	G-6272	Octal Tranceiver	IC1	74LS245
2	G-6016	Octal D Flip Flop	IC2	74LS374
3	G-6121	Octal Buffer, Invert.	IC3, IC4	74LS244
4	G-6118	Quad Exclusive Or Gate	IC7, IC22	74LS136
5	G-6005	1 of 8 Decoder/De-Plexer	IC8, IC10, IC19, IC33	74LS138
6	G-6361	CPU	IC9	D8085A
7	G-0689	Quad Data Selector	IC12, IC24, IC25	74LS157
8	G-0677	Nand Gate	IC15, IC27, IC36, IC39, IC53	74LS00
9	G-0680	And Gate	IC16, IC32, IC33	74LS08
10	G-6117	Quad Bus Buffer Gate	IC17	74LS125
11	G-0683	Or Gate	IC18, IC26, IC34, IC35	74LS32
12	54174	Hex Inverter	IC29	7405
13	53706	Dual D Latch	IC30, IC37, IC48	74LS74
14	G-0687	Dual J-K Flip Flop	IC31	74LS107
15	G-6009	Hex D-Type Flip Flop W/R	IC32	74LS174
16	G-0707-1	Survival "A"	IC40	
17	G-0707-2	Survival "B"	IC41	
18	G-0686	Exclusive Or	IC42	74LS86
19	G-6362	Audio Power Ampl.	IC44	LM380
20	54177	Hex Buffer/Drive (O.C.)	IC47	7407
21	G-0682	Nor Gate	IC49	74LS27
22	G-6363	Survival IC	IC50	DL57S22
23	G-6206	Sound Generator	IC51	AY-3-8910
24	51304	8 Station Dip Switch SPST	IC11	
25	G-6035	Trim Control	VRL	10K OHM
26	51289	Resistor 1/4W 5%	R13, R16, R86, R87, R88	100 OHM
27	53888	Resistor 1/4W 5%	R3, R4, R5	180 OHM
28	52376	Resistor 1/4W 5%	R6, R7, R8, R9, R10, R11, R15	270 OHM
29	51564	Resistor 1/4W 5%	R1, R2, R14, R89, R90, R92	1K OHM
30	53676	Resistor 1/4W 5%	R81	1.2K OHM
31	51384	Resistor 1/4W 5%	R12	2.7K OHM
32	51571	Resistor 1/4W 5%	R83	6.8K OHM
33	53978	Resistor Pack	RY1, RY2, RY4	1K OHM X 8
34	G-6364	Resistor Pack	RY3	1K OHM X 4
35	G-6031	Diode, Signal	D1, D2, D3	1S953
36	33088	Capacitor, Disc 1000V	C1, C39	330 PF
37	G-940	Capacitor, Disc 50V	C37	0.001 MFD
38	52393	Capacitor, Disc 100V	C3 Thru C12	0.05 MFD
39	52708	Capacitor, Tantalum 25V	C2, C32, C33	10 MFD
40	51988	Capacitor, Electrol. 25V	C34, C38	47 MFD
41	53893	Capacitor, Electrol. 35V	C35	470 MFD
42	G-0948	Capacitor, Film 100V	C15, C16	0.1 MFD
43	52720	14 Contact Solder Dip Socket		
44	52724	16 Contact Solder Dip Socket		
45	53711	40 Contact Solder Dip Socket		
46	G-6172	50 Circ. Right Angle Header		

## PACEL-001B P.C.B. ASSEMBLY

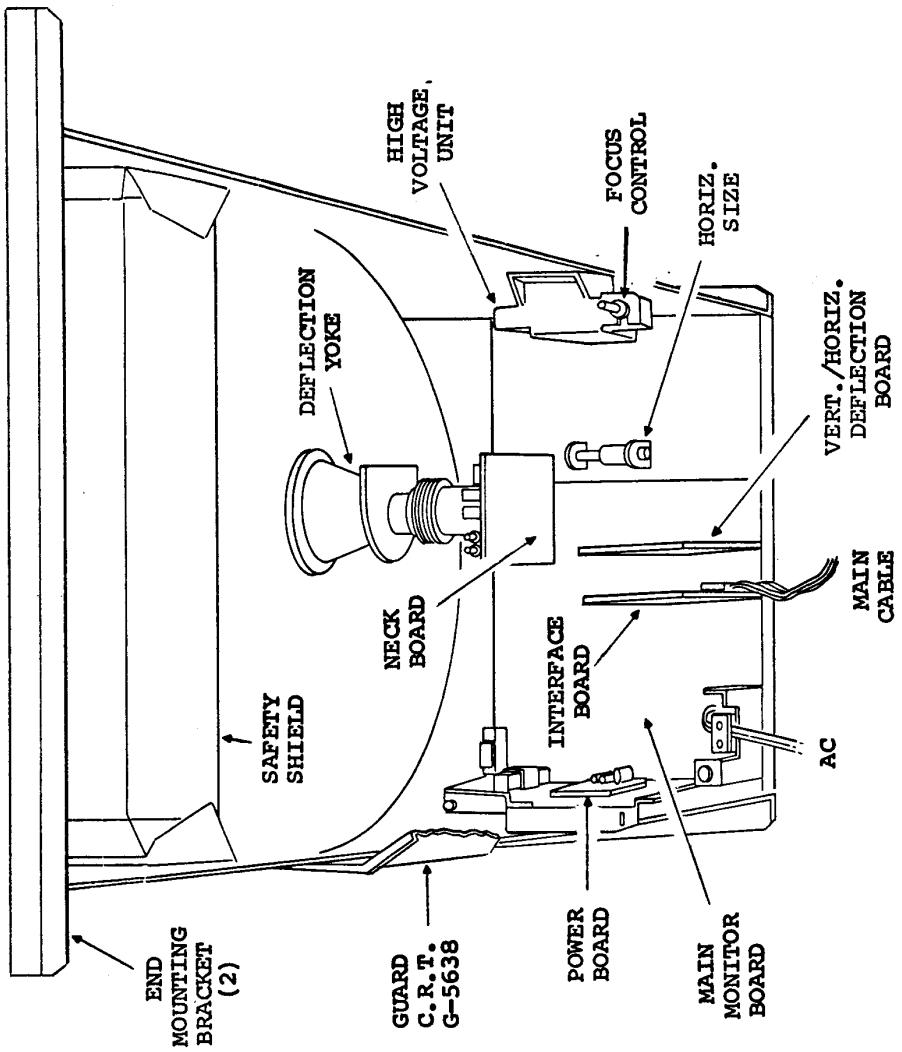
G-6365-A

ITEM NO.	PART NO.	DESCRIPTION	REF. DES.	MFGR. PART NO.
1	G-0690	Binary Counter	IC1, IC4, IC12, IC13	74LS163
2	G-0686	Exclusive Or	IC2, IC3, IC11, IC21	74LS86
3	53706	Dual D Latch	IC5	74LS74
4	G-6228	Quad 2 Input Nand Schmitt Trig.	IC6	74LS132
5	G-6367	Hex Inverter	IC7	7404
6	G-6016	Octal D Flip Flop (3 State)	IC8, IC16, IC31	74LS374
7	G-6013	4 Bit Adder	IC9, IC10, IC20	74LS283
8	G-0688	1 Of 8 Data Selector	IC14, IC15, IC29, IC30	74LS151
9	G-6009	Hex D-Type Flip Flop W/R	IC17, IC18, IC32, IC33	74LS74
10	G-0689	Quad Data Selector	IC19, IC34, IC35, IC36	74LS157
11	G-6272	Octal Tranceiver	IC22, IC38	74LS245
12	G-6019	RAM	IC25, IC26, IC27, IC28 IC41, IC42, IC43, IC44	2114
13	G-6121	Octal Buffer, Invert	IC37	74LS244
14	G-0959-32	Game Program 1	IC45	2716
15	G-0959-33	Game Program 2	IC46	2716
16	G-0959-34	Game Program 3	IC47	2716
17	G-0959-35	Game Program 4	IC48	2716
18	G-0959-36	Game Program 5	IC49	2716
19	G-0959-37	Game Program 6	IC50	2716
20	G-0959-38	Game Program 7	IC51	2716
21	G-0959-39	Game Program 8	IC52	2716
22	G-0959-40	Game Program 9	IC39	2716
23	G-0959-41	Game Program 10	IC40	2716
24	G-0959-42	Game Program 11	IC23	2716
25	G-0959-43	Game Program 12	IC24	2716
26	G-6366	11.000 MHz Crystal	X1	
27	51289	Resistor 1/4W. 5%	R1	100 OHM
28	51564	Resistor 1/4W. 5%	R2, R3	1K OHM
29	G-0940	Capacitor, Disc 50V	C1, C2, C30, C31, C35, C36	0.001 MFD
30	33088	Capacitor, Disc 1000V	C3	330 PF
31	33762	Capacitor, Disc	C33	470 PF
32	52393	Capacitor, Disc 100V	C5 Thru C29	0.05 MFD
33	G-0993	Capacitor, Electrol.	C4	47 MFD
34	52722	24 Contact Solder Dip Socket		
35	G-6172	50 Circ. Right Angle Header		



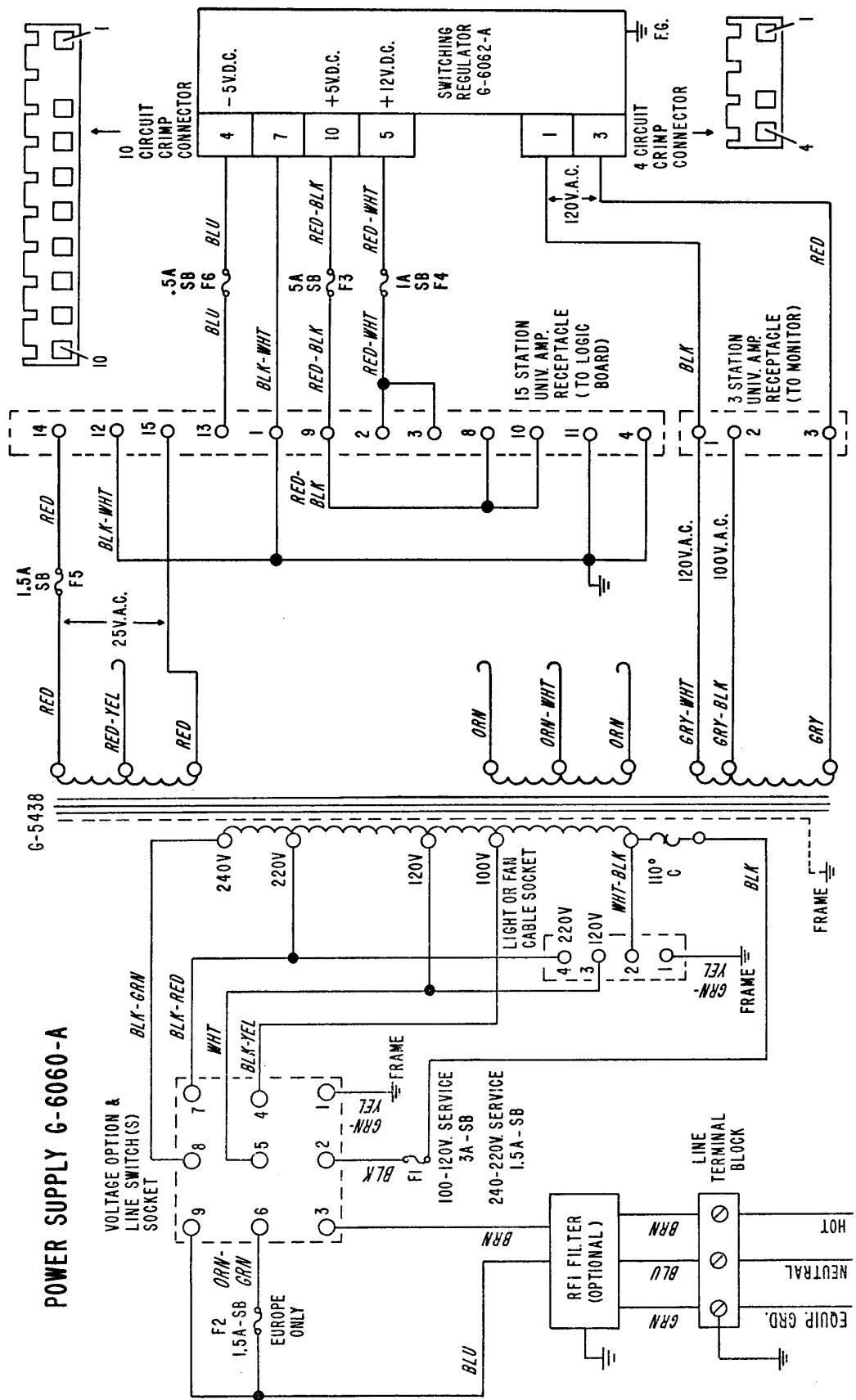
A-4

SURVIVAL  
G-205  
CABINET PARTS

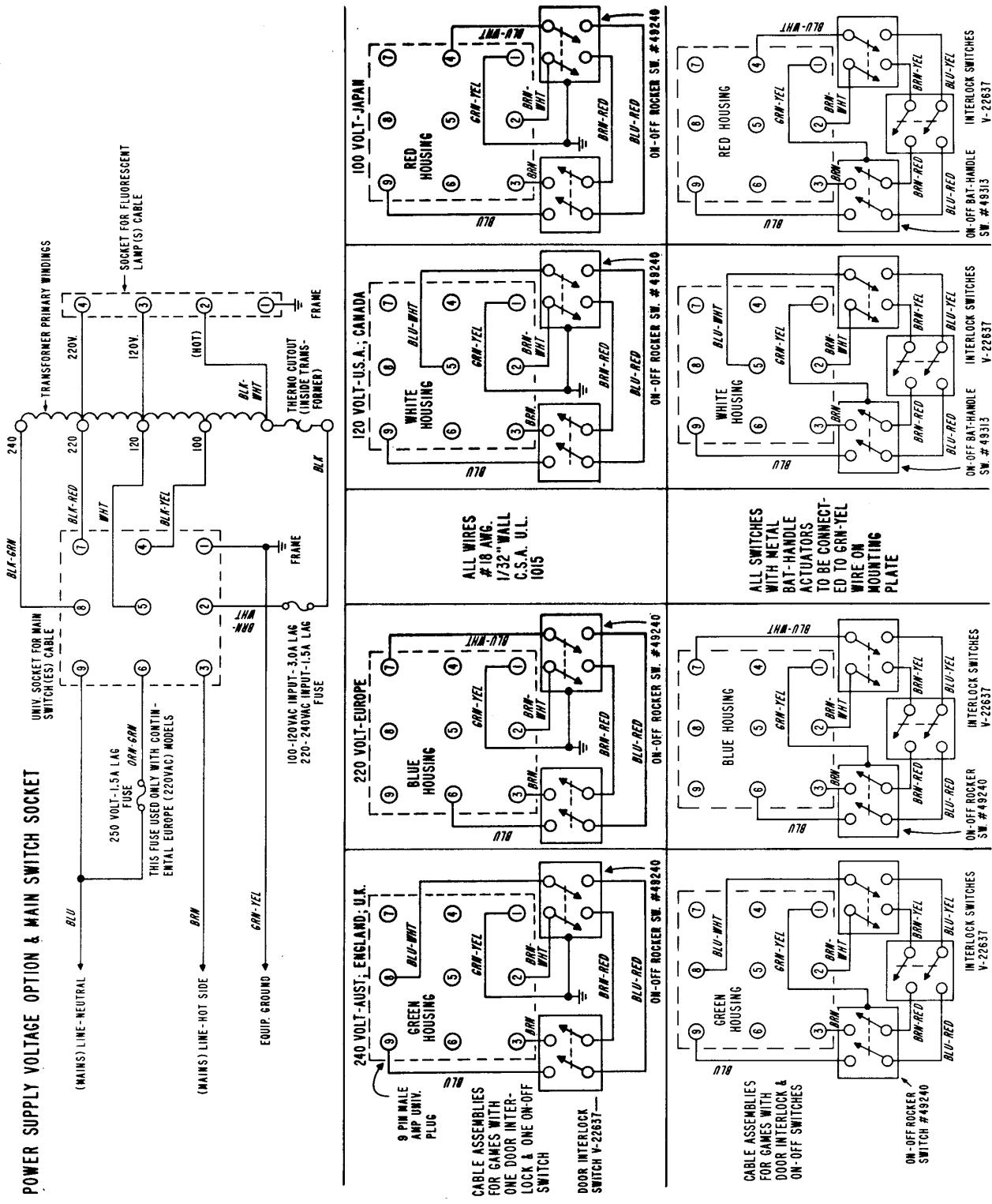


WELLS-GARDNER MONITOR ASSEMBLY

## POWER SUPPLY G-6060-A



POWER SUPPLY VOLTAGE OPTION & MAIN SWITCH SOCKET



## JOYSTICK SWITCH ADJUSTMENTS (8 WAY)

Fig. 1. Adjust each individual switch as follows:

- 1.1 Loosen front screw on switch bracket.
- 1.2 Move cam as far as possible toward switch & hold in this position.
- 1.3 Rotate switch toward cam until switch contacts close.
- 1.4 Continue to rotate switch until top blade deflects approx.  $1/16"$ .
- 1.5 Lock front screw on bracket.

Fig. 2. After adjusting all four switches, move lever against top, bottom & sides of circle and check switch action.

- 2.1 Switch #1 must break before switch #2 makes. No two switches can make contact at the same time at positions 1, 2, 3 & 4.

Fig. 3. Move lever at  $45^\circ$  angle (4 ways) and check. In this position, two switches must make at the same time.

$1/16"$  Fig. 1

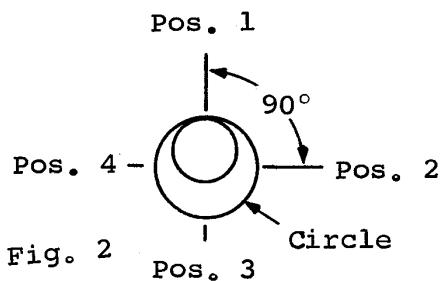
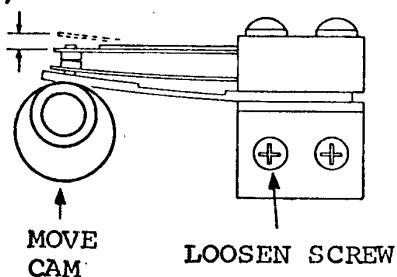
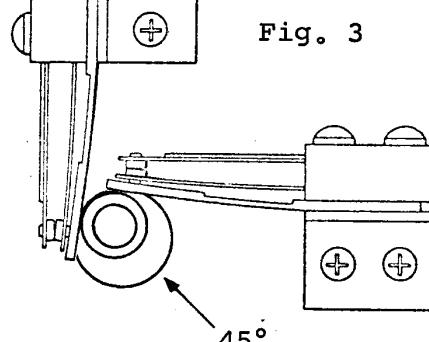
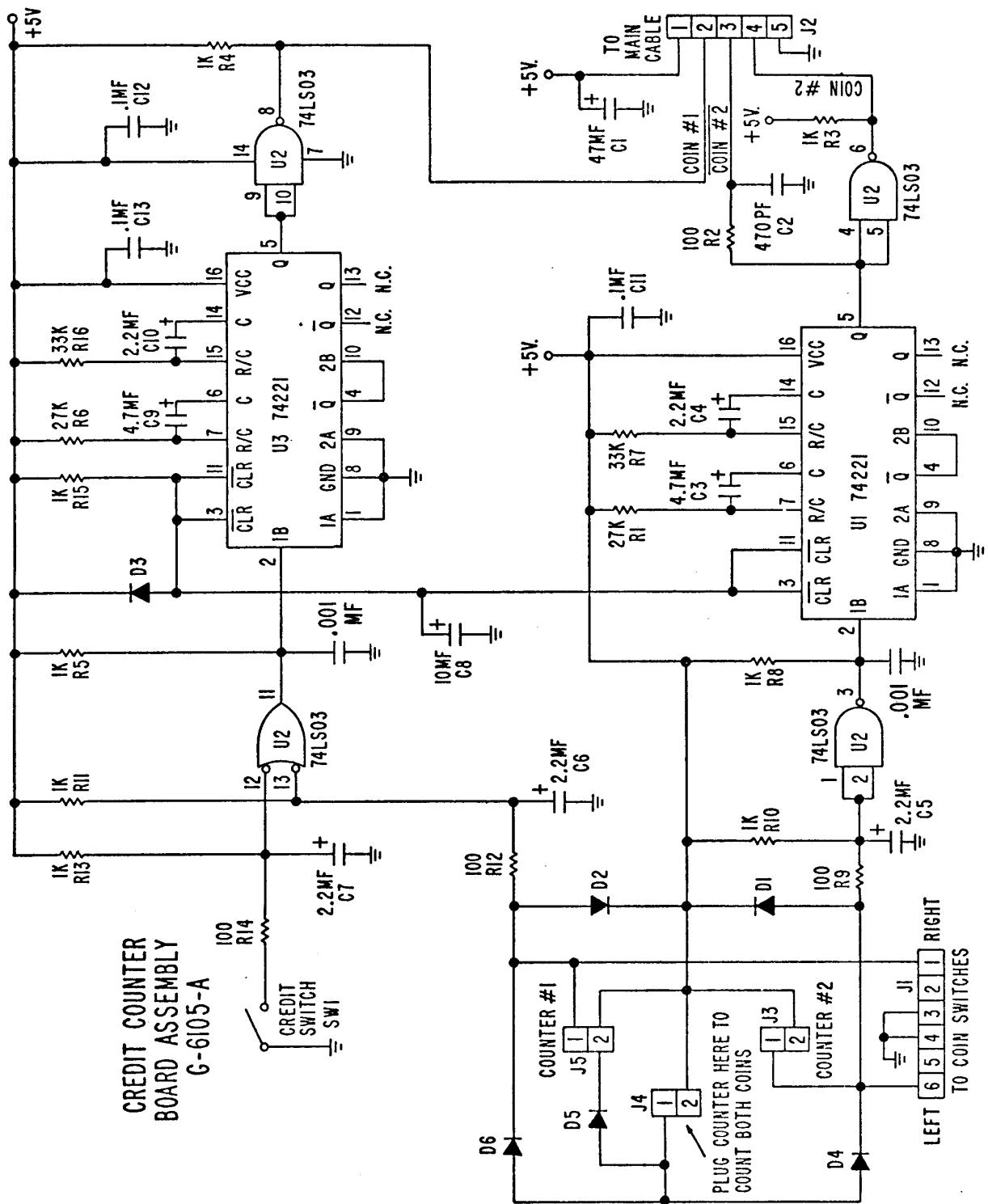


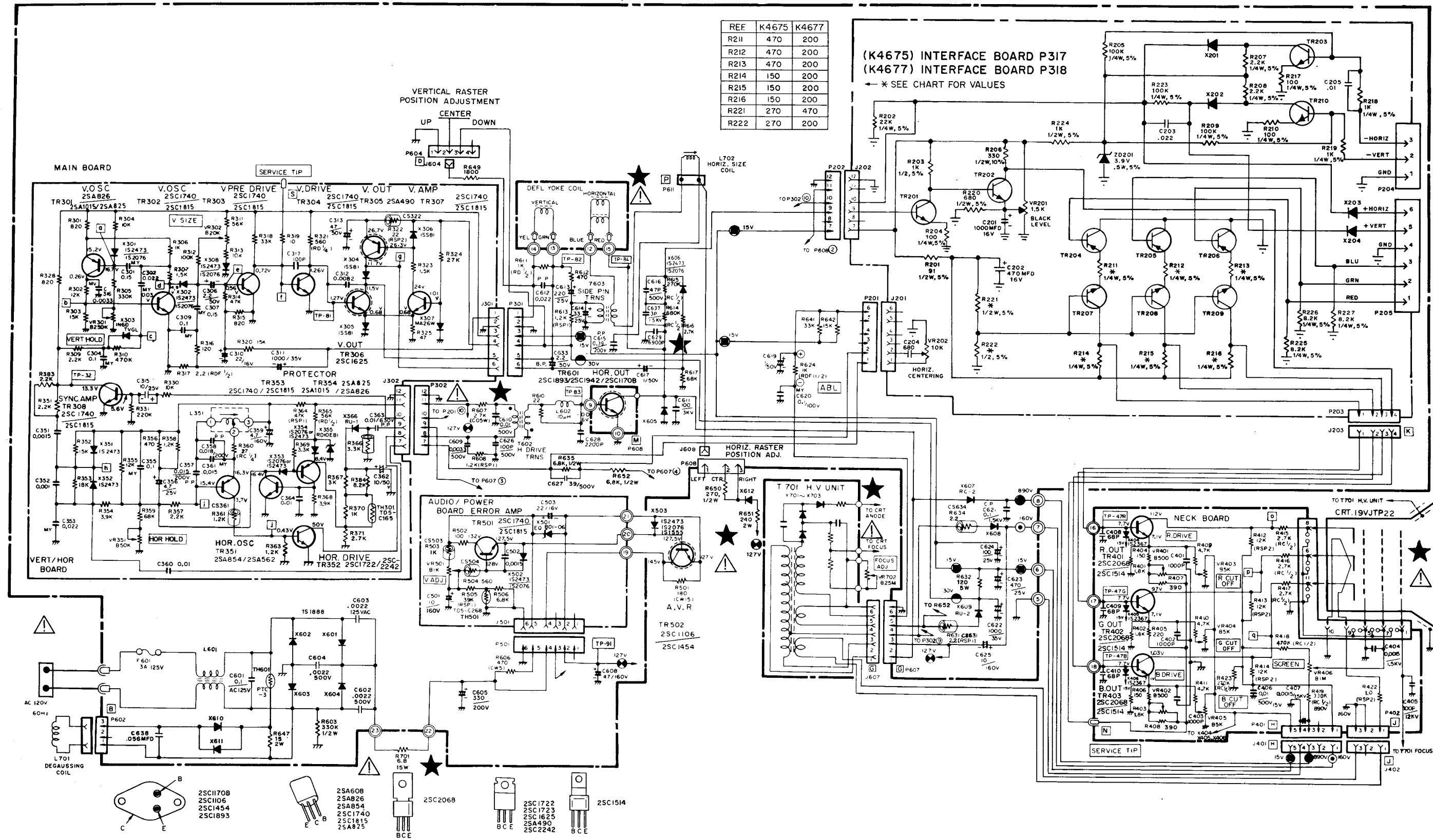
Fig. 3

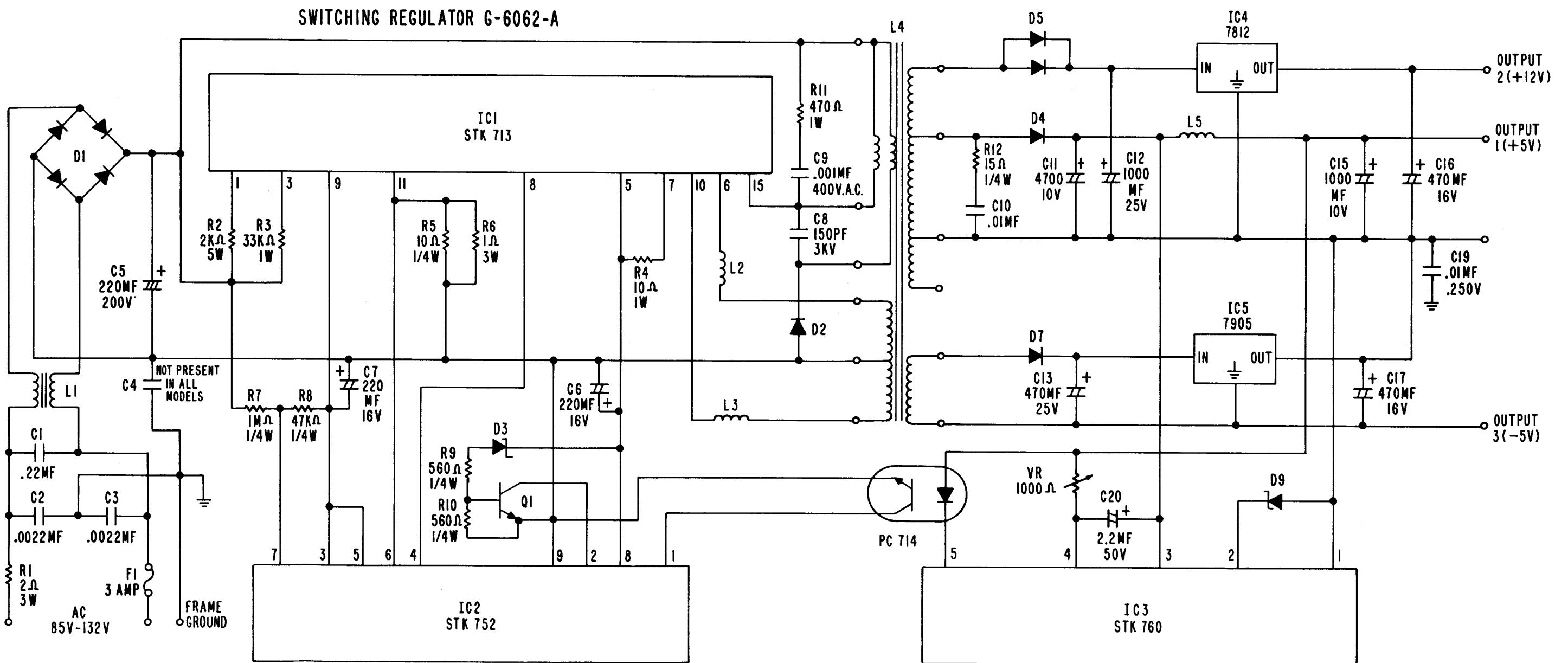


IMPORTANT: TIGHTEN ALL SCREWS on switch brackets to prevent any movement after adjusting.

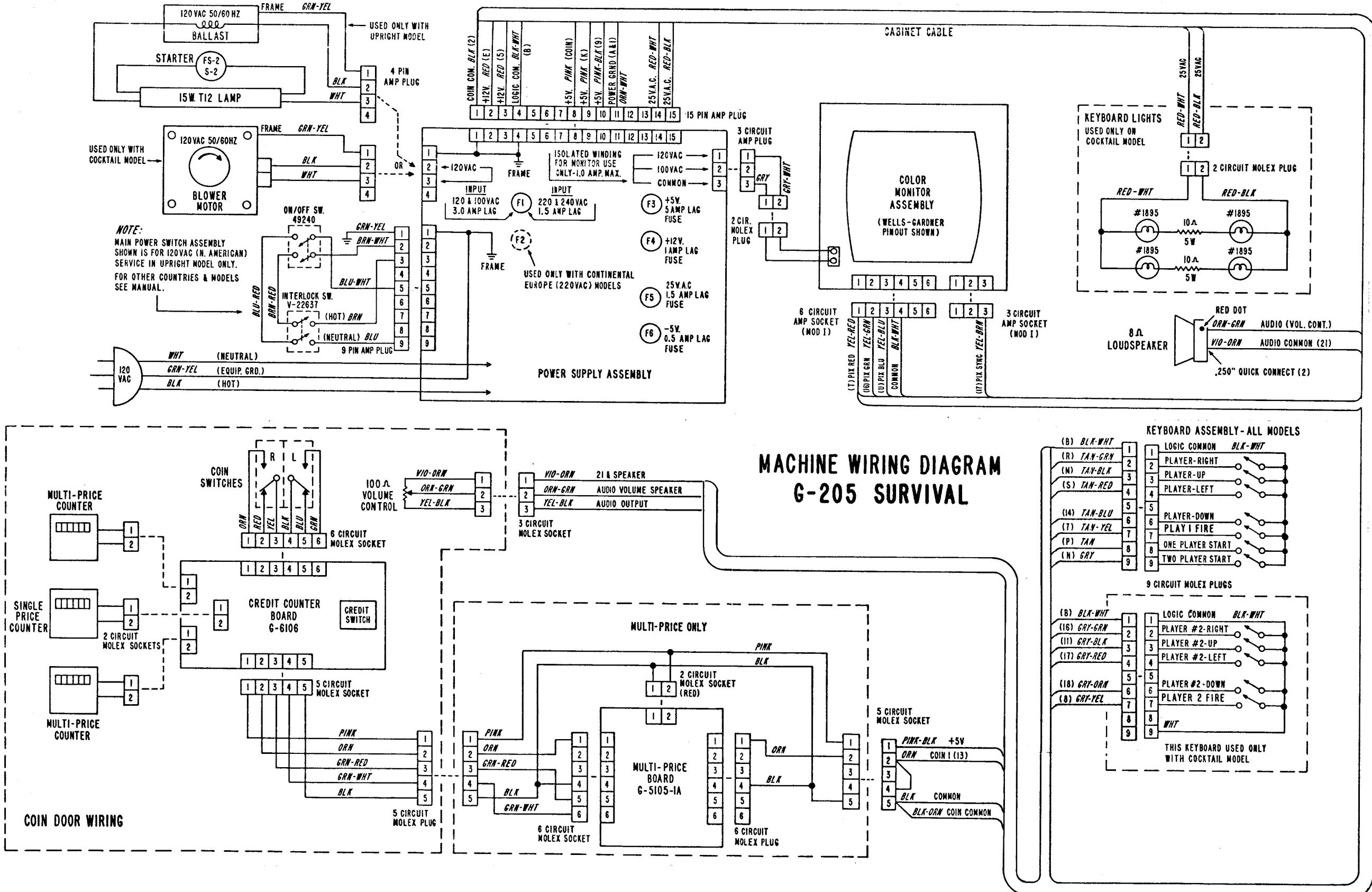


# 19" COLOR MONITOR SCHEMATIC DIAGRAM - MODEL K4675 & K4677



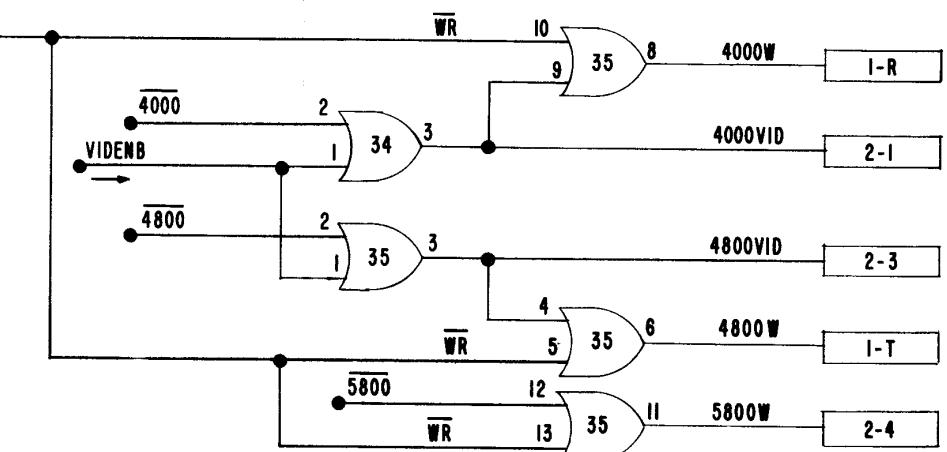
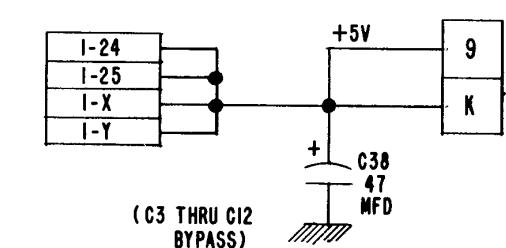
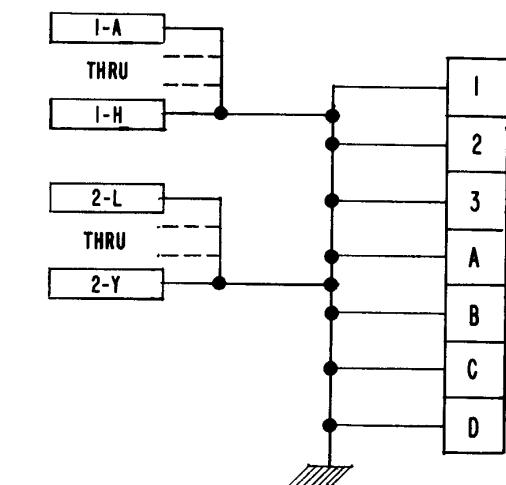
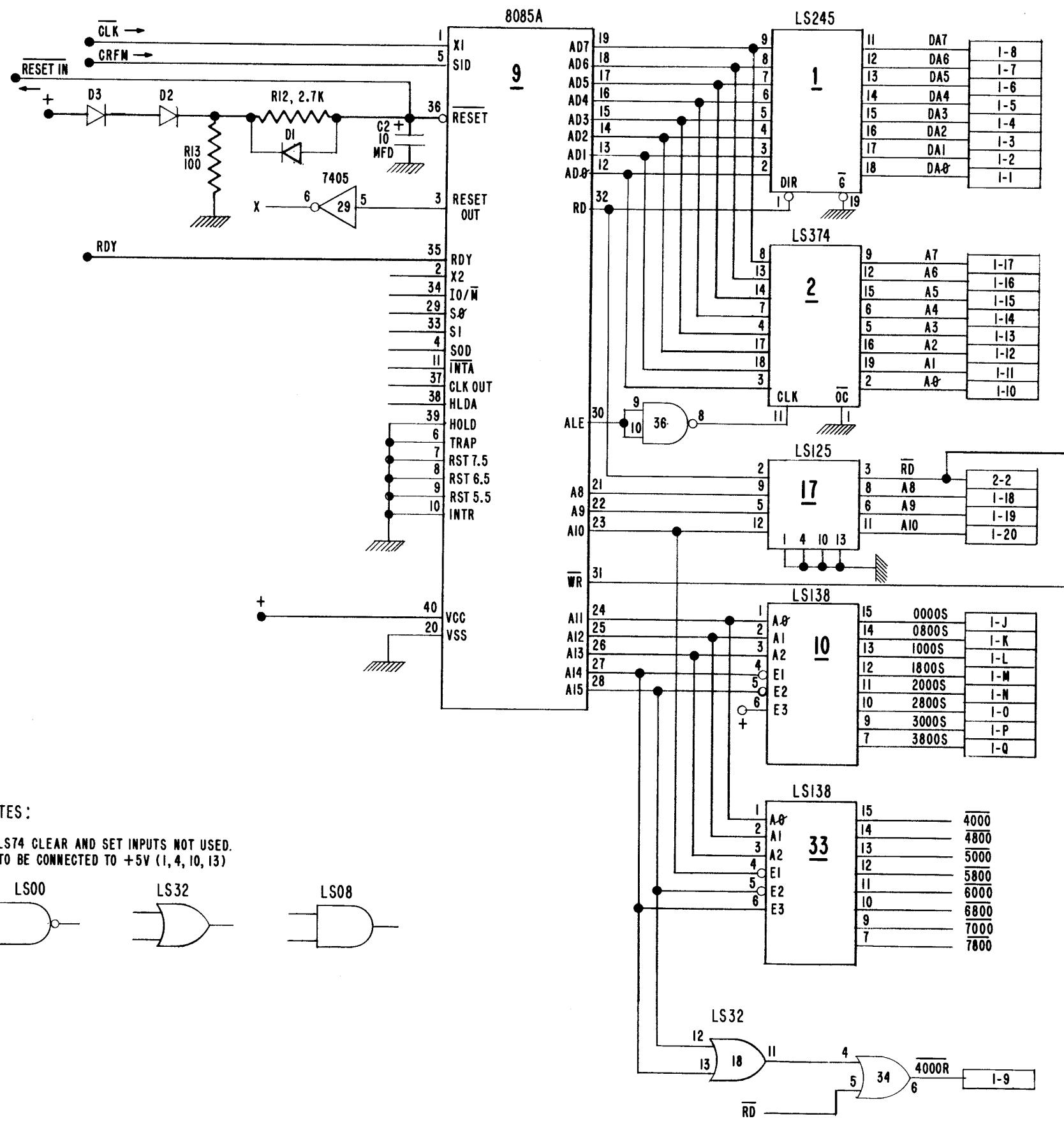


A-II



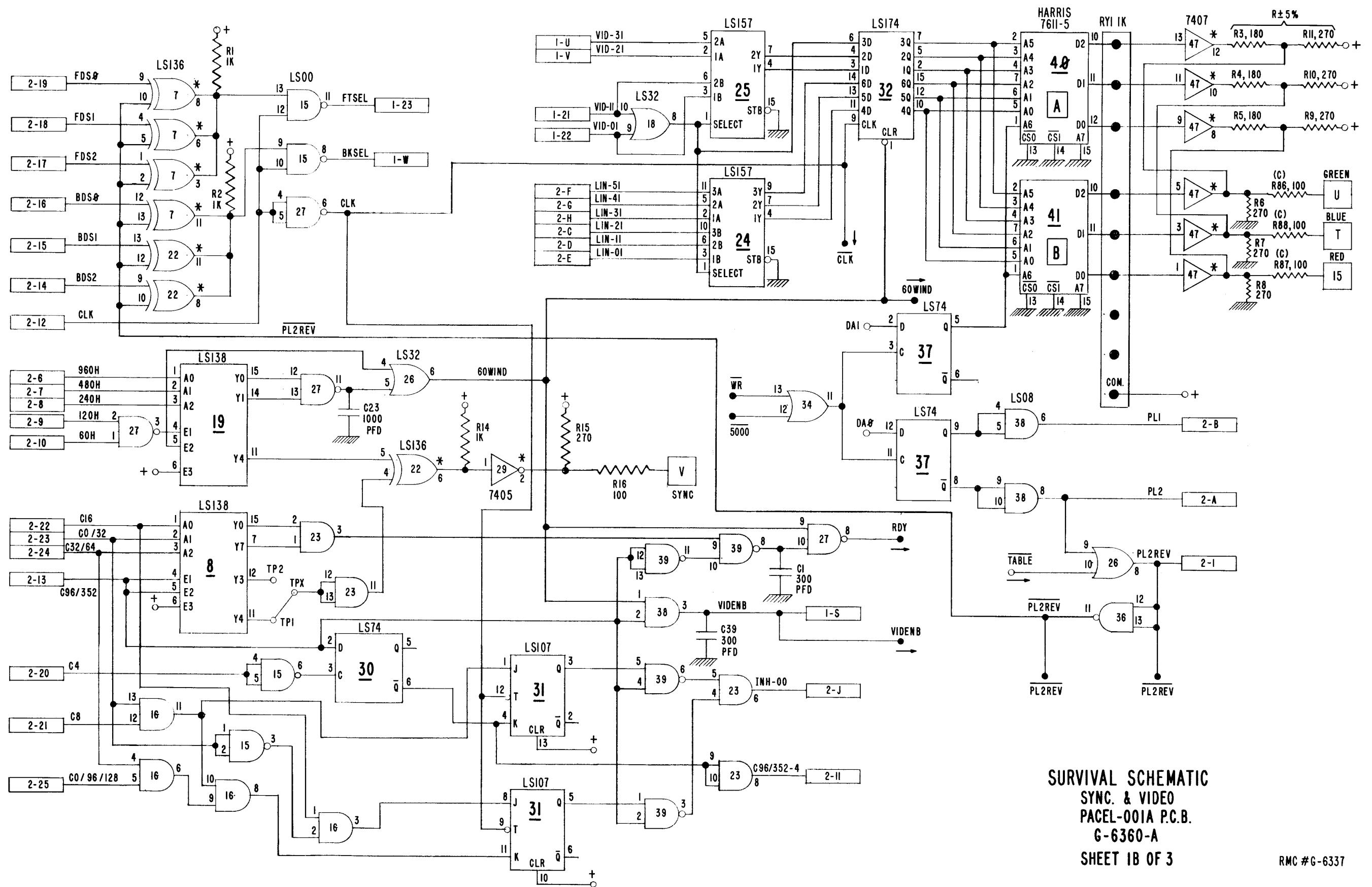
POWER GRND	ORN-WHT	A
POWER GRND	ORN-WHT	B
LOGIC COMMON	BLK-WHT	2
LOGIC COMMON	BLK-WHT	3
COIN COMMON	BLK-ORN	C
GROUND	BLK	D
AUDIO COMMON	VIO-ORN	E
AUDIO OUTPUT	YEL-BLK	F
+12V.D.C.	RED	G
+12V.D.C.	RED	H
N.C.	N.C.	I
PLAYER 1 FIRE	TAN-YEL	J
PLAYER 2 FIRE	GRY-YEL	K
+5V.D.C.	PINK	L
+5V.D.C.	PINK	M
PLAYER 1 UP	TAN-BLK	N
PLAYER 2 UP	GRY-BLK	O
2 PLAYER START	GRY	P
1 PLAYER START	TAN	Q
COIN SWITCH	ORN	R
PLAYER 1 RIGHT	TAN-GRN	S
PLAYER 1 DOWN	TAN-BLU	T
PLAYER 1 LEFT	TAN-RED	U
PIX. RED	YEL-RED	V
PIX. BLU	YEL-BLU	W
PLAYER 2 RIGHT	GRY-GRN	X
PIX. GRN	YEL-GRN	Y
PLAYER 2 LEFT	GRY-RED	Z
PIX. SYNC.	YEL-BRN	A
PLAYER 2 DOWN	GRY-ORN	B

36 CIRCUIT  
AMP-LEAF  
18 DUAL  
SOCKET



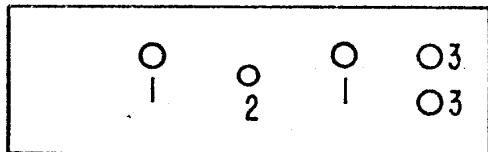
**SURVIVAL SCHEMATIC  
CPU  
PACEL-001A P.C.B.  
G-6360-A  
SHEET IA OF 3**

RMC # G-6337



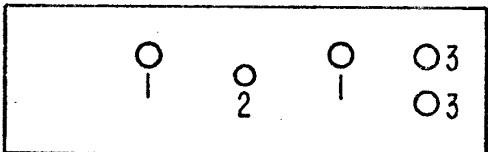
## CONTROL PANELS

MERMAID  
KIT #G-2328



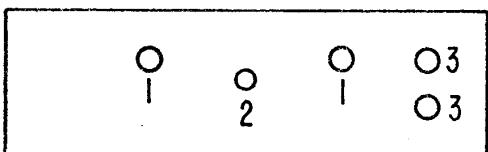
- 1 - Reverse Sail Button (2)
- 2 - 8 Way Joystick (1)  
RMC #G-6046-A
- 3 - Player 1 & 2 Buttons (2)

SURVIVAL  
KIT #G-2329



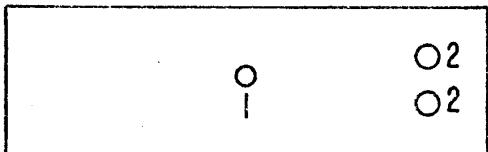
- 1 - Fire Button (2)
- 2 - 8 Way Joystick (1)  
RMC #G-6046-A
- 3 - Player 1 & 2 Buttons (2)

EYES  
KIT #G-2330



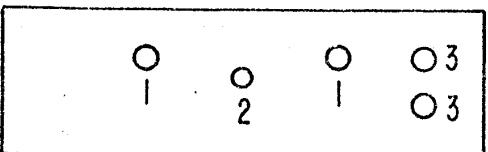
- 1 - Fire Button (2)
- 2 - 4 Way Joystick (1)  
RMC #G-5431-1A
- 3 - Player 1 & 2 Buttons (2)

NIBBLER  
KIT #G-2331



- 1 - 4 Way Joystick - Heavy Duty (1)  
RMC #G-6477-A
- 2 - Player 1 & 2 Buttons (2)

LEVERS  
KIT #G-2332



- 1 - Fire Buttons (2)
- 2 - 4 Way Joystick (1)  
RMC #G-5431-1A
- 3 - Player 1 & 2 Buttons (2)